

1. A lamellar die apparatus for meltblowing a heated liquid into filaments and directing air at the filaments, comprising:

a plurality of plates each having opposite side faces, at least two of said side faces confronting each other and having a liquid passage positioned therebetween for transferring the heated liquid, at least two of said side faces confronting each other and having an air passage positioned therebetween for transferring the air, and at least two of said side faces confronting each other and having a heating element passage therebetween,

10 a heating element positioned within said heating element passage for heating at least two of said plates, and

an extrusion die coupled with said plurality of plates and communicating with said liquid passage and said air passage for discharging the heated liquid as multiple filaments and for discharging the air at the filaments.

2. The apparatus of claim 1, wherein said liquid passage is formed by respective first and second recesses on different ones of said plates which abut one another, said air passage is formed by respective third and fourth recesses on different ones of said plates which abut one another, and said heating element passage is formed by respective fifth and sixth recesses on different ones of said plates which abut one another.

3. The apparatus of claim 1, further comprising a plurality of heating element passages positioned between two of said plates and a plurality of heating elements respectively contained in said plurality of heating element passages.

4. The apparatus of claim 1, wherein said heating element passage is located between said liquid passage and said air passage such that said heating element heats the liquid in said liquid passage and the air in said air passage.

5. The apparatus of claim 1, wherein said liquid passage and said air passage each include an inlet portion and an outlet portion, said outlet portion being wider than said inlet portion.

6. The apparatus of claim 5, wherein said outlet portion of said liquid passage forms an elongate liquid outlet slot.

7. The apparatus of claim 6, further comprising a plurality of distribution passages communicating with an elongate air outlet slot in one of said plates, said distribution passages further communicating with said air passage.

8. The apparatus of claim 7, wherein said extrusion die includes an elongate liquid inlet slot and an elongate air inlet slot respectively aligned in communication with said elongate liquid outlet slot and said elongate air outlet slot.

9. A lamellar die apparatus for meltblowing at least two heated liquids into multi-component filaments and directing air at the filaments, comprising:

a plurality of plates each having opposite side faces, at least
5 two of said side faces confronting each other and having a first liquid passage positioned therebetween for transferring a first heated liquid, at least two of said side faces confronting each other and having a second liquid passage positioned therebetween for transferring a second heated liquid, at least two of said side faces confronting each other and having an
10 air passage positioned therebetween for transferring the air, and at least two of said side faces confronting each other and having a heating element passage therebetween,

a heating element positioned within said heating element passage for heating at least two of said plates, and

15 an extrusion die coupled with said plurality of plates and communicating with said first and second liquid passages and said air passage for discharging the first and second heated liquids as the multi-component filaments and for discharging the air at the filaments.

10. The apparatus of claim 9, wherein said first liquid passage is formed by respective first and second recesses on different ones of said plates which abut one another, said second liquid passage is formed by respective third and fourth recesses on different ones of said plates which
5 abut one another, said air passage is formed by respective fifth and sixth recesses on different ones of said plates which abut one another, and said heating element passage is formed by respective seventh and eighth recesses on different ones of said plates which abut one another.

11. The apparatus of claim 9, further comprising a plurality of heating element passages positioned between two of said plates and a plurality of heating elements respectively contained in said plurality of heating element passages.

12. The apparatus of claim 9, wherein said heating element passage is located between said first liquid passage and said air passage such that said heating element heats the liquid in said first liquid passage and the air in said air passage.

13. The apparatus of claim 9, wherein said first and second liquid passages and said air passage each include an inlet portion and an outlet portion, said outlet portion being wider than said inlet portion.

14. The apparatus of claim 13, wherein said outlet portions of said first and second liquid passages form respective elongate first and second liquid outlet slots.

15. The apparatus of claim 14, further comprising a plurality of distribution passages communicating with an elongate air outlet slot in one of said plates, said distribution passages further communicating with said air passage.

16. The apparatus of claim 15, wherein said extrusion die includes first and second elongate liquid inlet slots respectively aligned in communication with said first and second elongate liquid outlet slots and an elongate air inlet slot aligned in communication with said elongate air outlet

5 slot.

17. The apparatus of claim 16, further comprising a second air passage positioned between two of said side faces, said second air passage communicating with said extrusion die such that air is discharged from said extrusion die on opposite sides of the filaments.

18. The apparatus of claim 17, wherein said heating element passage is located between said first liquid passage and said air passage such that said heating element heats the first liquid in said first liquid passage and the air in said air passage, and further comprising a second
5 heating element passage positioned between two of said side faces and containing a second heating element for heating at least two of said plates, said second heating element further located between said second liquid passage and said second air passage such that said second heating element heats the second liquid in said second liquid passage and the air in said
10 second air passage.

19. A method of meltblowing filaments of first liquid, comprising:
 introducing the first liquid between a pair of plates in a
manifold assembly;
 introducing process air between a pair of plates in the manifold
5 assembly;
 directing the first liquid from the manifold assembly into an
extrusion die;
 directing the process air from the manifold assembly into the
extrusion die;
10 discharging the first liquid from the extrusion die as a plurality
of filaments;
 discharging the process air from the extrusion die to attenuate
the filaments; and
 collecting the filaments to form a web.
20. The method of claim 19, further comprising:
 introducing a second liquid between a pair of plates in the
manifold assembly;
5 directing the second liquid from the manifold assembly into the
extrusion die;
 combining the first and second liquids;
 discharging the first and second liquids from the extrusion die
as a plurality of multi-component filaments;

10 discharging the process air from the extrusion die to attenuate
the multi-component filaments; and
collecting the multi-component filaments to form a web.

21. The method of claim 20, further comprising:
heating at least one of the first liquid and the process air in the
manifold assembly with a heater positioned between a pair of plates of the
manifold assembly.

22. The method of claim 20, further comprising:
introducing quench air between a pair of plates in the manifold
assembly;

5 directing the quench air from the manifold assembly into the
extrusion die;
discharging the quench air from the extrusion die to quench
the filaments.

23. The method of claim 19, further comprising:
heating at least one of the first liquid and the process air in the
manifold assembly with a heater positioned between a pair of plates of the
manifold assembly.

24. The method of claim 19, further comprising:
- introducing quench air between a pair of plates in the manifold assembly;
- directing the quench air from the manifold assembly into the
- 5 extrusion die;
- discharging the quench air from the extrusion die to quench the filaments.